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Improvements in audiovisual machines have produced such effective electronic materials as projectors, films and filmstrips, slides, transparencies, visual tapes, recordings, broadcast and closed circuit television, language laboratories, and teaching machines. The utilization of language laboratories in teaching foreign languages seems to aid students in reading, vocabulary, and grammar more than in reading comprehension and speaking ability.

The school curriculum should be revised to adapt to the changes of society and to new technological advances. Instructional materials can control the curriculum and cut unnecessary and repetitious drill by teaching some skills more effectively. However, problems of conformity and boredom may result from the use of technology in instruction. Users of technological media in elementary schools should be cautioned as to whether it will improve a child's way of thinking and developing.

Special attention should be given to proper selection and training of the staff, more flexible instructional procedures, establishment of specific goals, correct allocation of finances, and balanced program curriculum.

Planning for the technological changes in building design, construction, and staffing should be flexible and adaptable; it should include the entire resources of the community. Definitive educational specifications should be developed, and these should be related to new media in the learning process and to cost analysis. Participants in the work conference are listed.

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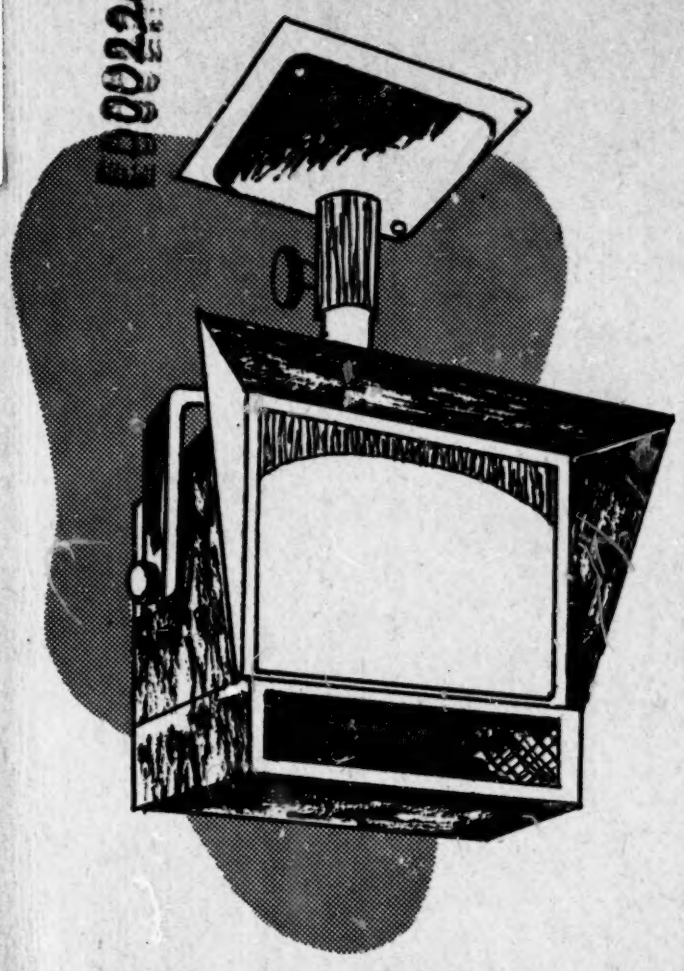

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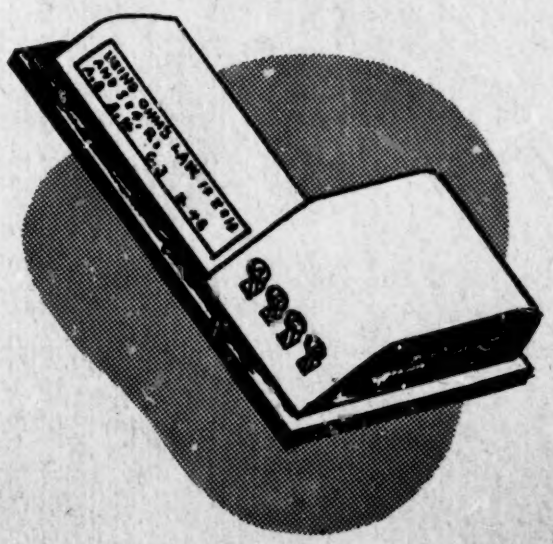

SCHOOL OF EDUCATION
University of Denver

August, 1961

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THE CHALLENGE OF TECHNOLOGY IN PLANNING FOR EDUCATION

REPORTS OF COMMITTEES

in

The Work Conference in Curriculum,

Instruction and Administration

11-469 and 11-489

School of Education

University of Denver

Denver, Colorado

July 3-21, 1961

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TABLE OF CONTENTS

SECTION		PAGE
INTRODUCTION		vi
I.	STAFF ORGANIZATION AND UTILIZATION	1
	Purposes and Goals	2
	Kinds of Effective Organizations in Staff Utilization	2
	Effective Technological Materials	12
	Cost in Making a Change in Staff Organization	15
	Conclusions and Recommendations	16
	Ode to Technology	17
II.	CURRICULUM AND INSTRUCTION	18
	Technology and the Curriculum	19
	Technology and Instruction	20
	The Ungraded Primary Plan	21
	The Effect of Technology on the Elementary Curriculum	22
	Cautions in the Use of Technological Devices in Elementary Schools	23
	Implications of Technology for Reading	24
	Impact of Technology on Foreign Language Curriculum and Instruction	25
	Impact of Technology upon Industrial Education	26

SECTION PAGE

Limitations and Dangers of Technology..... 27

III. ADMINISTRATION AND SUPERVISION..... 29

Introduction to Section..... 30

Freedom and Authority in Planning for Education..... 31

Necessity for More Teacher Planning Time..... 31

Blocks-of-Time for Laboratories, Practical Arts and Creative Activities..... 33

Flexible Class Scheduling..... 35

Size of Instructional Units..... 37

The Affect of Technology on Administrative and Supervisory Functions..... 38

Counting the Cost..... 39

Summary--Coordination of Activities..... 40

IV. BUILDING DESIGN..... 42

Planning for Technological Change in Education..... 43

Greater Flexibility..... 45

Dual Use of School Buildings..... 48

School Buildings..... 49

Library Space..... 51

The Year-round School..... 54

Study and Conference Areas..... 56

Offices and Conference Rooms..... 58

SECTION PAGE

V. PUBLIC RELATIONS..... 60

Introduction to Section..... 61

Board of Education..... 62

Staff..... 64

External Public Relations..... 66

Fact finding..... 67

Planning..... 67

Communicating..... 68

Evaluating..... 68

Financial Aspect..... 68

Summary..... 69

VI. Participants in the Work Conference..... 71

INTRODUCTION

Technological changes occurring within the culture lead inevitably to needed changes in the schools themselves--in curriculum, in teaching methodology, and in administration. No administrator worthy of the name can long ignore the implications of such phenomena as the shorter working week, increased leisure time, changes in the role of women, and the impact of automation, to mention a few. These "newer" problems demonstrate all too dramatically that schools must change to meet the impact of technology on our social order and on the children who will one day face a highly technical way of life as adults on their own.

But technology, like a coin, has two sides. Whereas the problems faced by administrators maybe said to have been <u>caused</u> by the advent of the technological age, the administrator would be less than human if he could not hope to look to their <u>solution</u> by means of the very technology which gave rise to the problems in the beginning. The movement toward technological solution to educational problems, long dormant since World War II, has become re-energized since 1955, and now looms large in the minds of a gadget-minded public. Immense amounts of money are currently being invested commercially in the preparation of educational "hardware" and programs for general usage. Why cannot these new mechanical and electronic devices be received by the schools with open arms? Why, the administrator wants to know, can we not up-date classroom instruction and relieve the teacher shortage through the use of these media of instruction?

These and other allied questions encouraged the staff of the School of Education, University of Denver to schedule a work conference during the summer of 1961 in Denver. Entitled "The Challenge of Technology in Planning for Education", the conference enrolled 50 participants from all parts of the nation. A four-day "technicum" (display of teaching machines and other technological media) was held in connection with the work conference. Numerous national figures familiar with the field were invited to participate. Nationwide interest was generated in the project.

The work conference people sought answers to questions occasioned by the impact of technology on the schools in five major areas: Staff Organization and Utilization; Curriculum and Instruction; Administration and Supervision; Building Design; and Public Relations. The results of their inquiry may be found in these pages.

The reader should observe one caution--the reports constitute no final answer to technological change. Rather, they represent in the main what one might expect to find, the reactions of seasoned teachers, principals, and superintendents to a major enigma of our times--the challenge of technology to educational planning. In that respect, they seem to me to be outstanding.

Special thanks are due Dr. Robert S. Gilchrist, who served as the chief consultatn, and who challenged the group to pose and solve problems in the work conference format, and to Mrs. Marie H. Metz, a work conference participant who generously volunteered to edit the final report. The latter also helped with the typing of the final manuscript.

M. Chester Nolte,
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SECTION I

STAFF ORGANIZATION AND UTILIZATION

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STAFF ORGANIZATION AND UTILIZATION

Purposes and Goals

Changes are required in the organization and utilization of the staff of a school taking advantage of technological advances, in order to accomplish its purposes in three broad categories.

A. To improve pupils' opportunities for

   1. Participating fully in such learning activities as discussion, recitation, demonstration of skill, etc., in small groups

   2. Listening and observing in large groups to lessons presented by a teacher expert in the particular area

   3. Developing through individualized instruction the skills and habits of independent study and a sense of personal worth and personal responsibility

B. To improve teachers' opportunities for

   1. Teaching in the areas of their greatest individual interest and competence

   2. Planning and preparing lessons more thoroughly

   3. Attaining higher status through cooperative interaction with their fellow teachers

C. To improve the curriculum of all pupils by

   1. Selecting and presenting content more carefully

   2. Choosing methods of instruction suited to the learning characteristics of particular groups or individual pupils

   3. Making better and fuller use of instructional materials and equipment

Kinds of Effective Organizations in Staff Utilization

In the Educational Policy Commission's publication, An Essay

on Quality in Public Education, a yardstick is found for use in developing a staff organization. This guide states that there should be enough competent professional in any school system to ensure that every pupil receives needed attention. The pamphlet continues:

> Where this standard is met, classes are of various sizes, depending on subjects taught and the characteristics of the student body. If the school program is to provide wide opportunities, and if the supplementary services of guidance counselors, librarians, coordinators, and administrators are to be available, there is obviously some minimum staff size below which needed professional services cannot be supplied. Experience in good school systems indicates that this minimum is about fifty professionals per thousand pupils. These professionals might be distributed in many ways. In some cases as many as forty might be classroom teachers. If somewhat larger classes are feasible, thereby decreasing the number of teachers, the individual assistance each pupil needs for maximum achievement can be provided only if the number of supplementary professional personnel rises to compensate. If fewer than fifty professionals are available per thousand pupils, some of the elements of a program of high quality are likely to be slighted.
>
> It should be emphasized that this ratio is a minimum. Better services to pupils, and consequently higher quality education, can be provided with a competent staff of larger size. In communities where schools are best supported, staffs range up to seventy professionals per thousand pupils.

Plans, in growing numbers, are being proposed which will alter administrative practices so that the school may be free to meet the needs of all children. The search for better ways to group children and to utilize the staff has produced examples of many kinds of organizational patterns and variances of these plans in operation. This committee has chosen to present five major patterns to explore as possible solutions to the problem.

A. Principal

The principal's responsibilities in the educational program are essentially the same regardless of staff organization, namely:

1. To provide leadership for teachers in the implementation of purposes and goals
2. To modify the schedule to implement the selected organization
3. To assign and clarify duties of the personnel
4. To evaluate, provide or reject materials recommended by the personnel
5. To arrange for a plan of evaluation

B. Teacher

1. Self-contained classroom

The self-contained classroom allows one group of children and one teacher to remain together for the major part of the school day. This type of organization can be justified when the individual teacher is superior. Just as a language laboratory or a teaching machine cannot improve the instructional material fed into it, the value of the self-contained classroom depends solely on the quality of the teacher within it.

a. In the ideal situation the teacher is supplemented by specialists and technological equipment when they contribute favorably.
b. The teacher integrates subject matter fields and individualizes the work for each child according to his entire growth pattern.
c. Individual and group counseling is done by the teacher.

2. Nongraded school

The nongraded school provides a single, unbroken learning continuum through which pupils progress. The removal of grade barriers encourages continuous individual progress. Bright pupils do not have ceilings placed on their learning nor do their slower classmates struggle beyond their capabilities. The span of achievement is reduced in the classroom. This relieves the teacher of many varied preparations and enables her to work more efficiently in preparing quality lessons and in giving more individualized instruction.

a. How child's progress is determined

- Not by the clock
- Not by the calendar
- Not by his birthday
- Not by the neighbors

b. Why we should make a change

Educators know from increasing knowledge of child growth and development that children entering school vary in many ways.

c. A mistaken illusion

- That all children have an identical growth pattern
- That all children fit into a lockstep graded plan

d. The benefits of nongraded organization

- Realistic acceptance of mental growth
- A realistic physiological fact-individual
- Differences in growth patterns

e. Will this plan of organization solve all of our educational problems?

- Pressures in our graded plan
- Therapy--continuous growth
- There is no magic formula as we strive to meet the contemporary challenges of education. We must study, create, discard, adapt new plans, techniques and procedures to help children meet the realities of a promising new world. In increasing numbers the nongraded plan has been accepted as an answer to these challenges.

3. Team or cooperative teaching

Of the many ways to organize an elementary school so that the best educational advantages will be provided for children, one which appears to have much merit is the theory of team or cooperative teaching.

"Provide for individual differences" is the constantly reiterated phrase of educators. It would follow that this can best be done then by providing for individual differences among teachers as well as children. Team teaching is an attempt in that direction.

It has long been assumed that a person armed with a baccalaureate degree and a state certificate permitting him to teach in a public school is automatically endowed

with knowledge and the ability to teach in any learning situation, and that he is equally well equipped to collect all the moneys, check and record attendances, care for snakes and turtles, splint a broken arm, and supervise the lunchroom.

a. Team teaching works on the premises that:

- Teachers vary as individuals in their interests and talents
- A stimulated and interested teacher with a deep knowledge and understanding of his subject can make it alive and interesting
- Large groups can profit from instruction by a specialized teacher in a given area
- Better learning and teaching takes place when a teacher is freed from much--or most--of the non-professional routines
- Better teaching and learning situations exist when two or more teachers pool their special abilities for the benefit of a given group of children

b. How, then, can these premises be implemented?

- Team teaching can be as effective, theoretically, in the elementary school as in the secondary school. One basic difference is that younger children need to identify themselves with one person who is "their teacher" and to whom they can go with problems, and in confidence. This concept has been, and is one of the premises for the self-contained classroom. They may need this to greater extent than in the secondary schools, although there is probably room for argument here.
- Through study and planning with the whole staff, and through solicited support from the community, a system that fits each

individual school, the three levels of primary, intermediate, and upper elementary, and based on the familiar characteristics of team teaching, can be worked out. It must be worked out cooperatively. It must avoid all appearances of a "crash program".

c. The following plan of organization is offered as a pattern:

- A faculty organized into two or three teams
- Each team to consist of three to five members
  - One to be selected as team or group leader, or chairman. He should be the one who appears to have a greater ability as a teacher and leader.
  - Each member should have a special ability in the field of instruction.
- Include with the team the special teachers (in many schools, the art, music, physical education, and speech teachers)
- The "team pupils" to consist of class groups no wider in span than three, but preferably two, grades.
- Teacher aides should be available for clerical routine work if at allpossible. Some way of relieving the teacher of the work which can be as well done by non-certificated persons must be provided.

> If we are smart enough to utilize automation and electronic equipment where it is appropriate in large groups, and where it helps to provide for a variety of experiences for different individuals; if we capitalize on these new developments for good ends, then we can free ourselves to work with children to provide genuinely individualized education. But if we somehow forget about the human element, the need in teaching for a warm, friendly

> child-adult relationship, then these new developments will not be good for education.[1]

4. The dual progress plan

The dual progress plan bears its name because students progress in language arts, social studies, and physical education according to the usual grade system, while they progress in science, mathematics, and the arts on a nongraded basis. A student spends one half of the school day in an ability-grouped class of his grade mates, studying language arts-social studies with a "core" specialist teacher, and physical education with specialist in that area. During the other half day, he attends different cross-graded ability-grouped classes in mathematics, science, arts and crafts, and music under different specialist teachers.

5. The Joplin plan

The Joplin is based on every youngster being in his own graded homeroom. The teachers of that grade plan their schedules together in order to teach reading and arithmetic at the same time each day. The pupils then move to a room, depending on their achievement in either reading or arithmetic. In this manner the heterogeneity within a group is somewhat lessened for

---

[1]William Alexander, "The Electronic Age", 1960.

the teacher.

It is possible to devise a method of utilizing the staff to meet your needs using a combination or suggestion from any of the above types of organization. These types of organizations of staff will vary with the preferences and the local circumstances of the school system. It is possible to use the nongraded school team teaching combination; the self-contained classroom may also be one in a nongraded situation.

The enrollment bulge has indicated that by 1965 the nation will need half a million more school teachers. This means that some method of utilization of the staff must be developed by using the available teachers more effectively and efficiently. Our philosophy should be for the best quality of education possible.for each youngster. Any attempt to maintain a low ratio of pupils to teachers will become more difficult as additional pupils crowd into the standard classroom, and the quality will be further impaired if inadequately trained teachers are used to ease the situation. One educator raises a question, "Is it better to be five feet from a mediocre teacher or fifty feet from a great teacher?"

In light of our own crowded classrooms and over-extended staff, we need to look at all possibilities--

research, experiments, and studies to determine whether our problems can be solved by physical assistance in the type of organization we plan, or in the use of the technological aids, or both.

C. Specialists

1. Professional

The professional specialist is a certificated teacher who is skilled in one area of the curriculum.

a. Remedial reading teacher, speech therapist, vocal and instrumental music teachers, art teacher, and physical education teacher.

b. The teacher-librarian conducts a regular planned developmental library program and in addition works cooperatively with the staff making available other selected curriculum materials, namely:

- Flat picture files, art appreciation pictures, current magazines, specimen collections, slides, films, filmstrips, recordings and sheet music, tapes, models, dioramas, clippings and pamphlets, special maps and globes, field trip and community resource files, exhibits, expensive models, audio-visual machines, microfilm and reader and science demonstration cards and chart.

2. Paraprofessional

The paraprofessional specialist in an uncertificated person who may serve as a teacher's assistant in the following ways:

a. Correct and record objective tests

b. Accompany class and teacher on field trips

c. Collect and bring special project materials to the classroom

d. Prepare instructional aids planned by the teacher

e. Record grades on report cards

D. Aides

The aide or clerk is an uncertificated person who has stenographic training who may assist the teacher in these ways:

1. Type and duplicate work prepared by the teacher
2. Take registrations
3. Supervise the lunchroom
4. Collect lunch money
5. Supervise the playground
6. Make necessary routine plans for field trips
7. Make attendance reports

Effective Technological Materials

A. Machines

Improvements in audio-visual electronics have produced many kinds of projectors, films and filmstrips, slides, transparencies, visual tapes, recordings, broadcast and closed circuit television, language laboratories and the controversial teaching machines.

1. The opaque and overhead projector of 1961 will project a usable picture of anything from a postage stamp to a magazine page under all light conditions except direct sunlight.
2. With the new magnetic sound projector a teacher can

make his motion picture or add a special sound track to a film for special needs.

3. The sound film strip projetor is now a completely automatic, transistorized machine. With built-in screens, they present an audio-visual program at the push of a button, no focusing, no threading, no adjustments.

4. The 16mm sound projectors give maximum light output at both silent and sound speed, have permanent lubrication, transistor photo cells, and push button controls. Major film productions are centered on related units with films and textbooks being correlated.

5. Language laboratories allow all the students in a class simultaneously to listen to recordings by experts, to carry on a dialogue in a foreign language and provide playback for evaluation. Radical changes in teaching methods are involved. Teachers and administrators must understand thoroughly what language laboratories can and cannot do.[2]

6. Educational T.V. based on the master teacher concept, brings to mass audiences highly skilled presentations by experienced teachers with teams of researchers assisting.

Audio and visual materials are now designed to require a minimum of service time. Many dealers assume the responsibility of servicing with the sale of the machine. It is recommended that each school system have a Director or Coordinator of Audio-Visual Services. Each building should have an audio-visual coordinator full time for fifty teachers or half-time for twenty-five teachers.

B. Programmed materials

The provision of an adequate and relevant curriculum and

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[2]Elton Hocking, "Language Laboratories," The Nation's Schools, 65:83-85 (February, 1961).

the utilization of the staff are basic means of achieving quality teaching in any school system. The effects of these means may be strengthened by the use of modern technology in the instructional program. According to Dr. Skinner[3]

> ...the success of the machines come from the fact it forces the person who writes the program to analyze what he is doing and not to leave out any essential steps. If you take subject matter and assume the responsibility of writing item by item a program so that the student is usually right, you will discover how many gaps there are in the ordinary textbook and how much the teacher needs to come in to remedy the trouble that arises from the borken program.

Teaching machines may be defined as devices which[4]

1. Present a unit of verbal or symbolic information visually, usually in question form.
2. Provide the student with some means of responding to each unit.
3. Inform the student of the corectness of his response.

Advantages	Disadvantages
Programmed materials provide:	Programmed materials may:
1. Efficient use of time in checking routine items.	1. Tend to produce a nationally standardized curriculum depriving the local community of its voice in its instructional program.
2. Quick analysis of strengths and weaknesses of individual students.	
3. Means of minimizing the problem of different backgrounds and abilities of students.	2. Tend to be used when and where it has not been proved to be superior to regular teaching methods.

---

[3]Edward B. Fry, Gleen L. Bryan, and Joseph W. Rigney, Audio-Visual Communication Review (Vol. 8, No. 2, Department of Audio-Visual Instruction, Washington, D.C.), 1961, 65-70.

[4]Ibid.

4. Increased interest in progress of individual students.

5. Students an opportunity to proceed at own rate.

6. Mastery of skills.

7. Sequence of items in learning.

3. Tend to become used as a complete classroom technique, rather than an aid in special or individual instruction.

4. So completely departmentalize subject matter that integration of subjects is lost.

5. Be used as a teaching "tool" while in its present state of development, it can not truly "educate" in the sense of stimulating creativity and in teaching values and attitudes.

Cost in Making a Change in Staff Organization

A. The pattern on which a faculty is organized does not of itself affect costs.

B. It has been shown for example (in the Golden High School) that four teachers properly organized and equipped can teach English to 180 pupils as well as the customary six teachers in the conventional organization.

1. Allowing this team four reader assistants, one or two technical assistants, and a half-time clerk--each at $400 to $600 per year--lowers the cost of instruction considerably.

2. Staff reorganization, then, could be used to reduce the cost of education and relieve the teacher shortage at the same time.

C. Staff utilization to serve these ends violates both the basic purpose and the basic premise of flexible staff organization.

1. The basic purpose of staff organization and utilization

plans is to obtain the best possible quality of instructional program.

2. The basic premise of staff organization and utilization plans is that a professional teacher is a skilled instructor and therefore good management and sound economy require arrangements for as much as possible of the teacher's time to be devoted to instruction.

D. The committee estimates that a school whose faculty is organized for maximum teaching efficienty, furnished with necessary paraprofessional and clerical help, and provided with adequate tehcnological materials and equipment will cost at least as much, and probably more than, a traditional school. But the quality of instruction should be decidedly superior.

Conclusions and Recommendations

A. Changes in the pattern of staff organization and utilization to the benefit of the pupils, the teachers, and the instructional program, can be made in most schools.

B. No one pattern of organization is equally desirable for all schools and staffs.

C. Much remains to be learned about staff organization and utilization; therefore it is recommended that various patterns be tried, improved upon, and expanded in a flexible process of reorganization.

D. Newer patterns of staff organization will work successfully only with teachers who understand and believe in them, and only on condition that pupils and parents accept and support them.

Ode to Technology

Here without apology
We've brought you technology
In trappings quite costly and fine;
To help children's learning
We're sincerely yearning
And to save teachers their time.

Please consider each treasure,
They'll instruct and measure
Accomplishments exceedingly true
The cost's incidental,
Upkeep--elemental,
But dollars! 'Twill take quite a few!

The public may clamor
For instructional glamour,
Tho retarded or gifted the child,
Machines are the answer!
They'll teach and advance, sir, --
Alike are all learners beguiled!

No problem, the show-off!
His pranks simply go off
Because he's so interestingly taught.
He'll forge right ahead
When by challenge he's led
And his interest by programming is caught.

No teacher will languish
In professional anguish
Because her job's easily done!
She'll have time for planning
For dreaming and scanning
Big programs to challenge each one.

Esther Ball

SECTION II

CURRICULUM AND INSTRUCTION

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CURRICULUM AND INSTRUCTION

Technology and the Curriculum

Technological developments in the United States in the last twenty years have been so vast as to essentially change the nature of our society. Population growth is and has been skyrocketing. We are short of enough skilled technicians and scientists. Those persons over sixty-five years of age make up twenty-five per cent of our population. Various influences from television to the freeway have created a new national "sameness." Ninety per cent of our population lives in ninety-one metropolitan units. There are now five million more women than men in this country. The significance of these things is not reflected in the curriculum. We should strive toward revising the curriculum to reflect and to adapt to these changes, and also toward using the technological aids that these conditions afford.

James D. Finn states that we must have: (1) an adequate supply of technicians and scientists (2) a society educated more and better in technology (3) a direct school utilization of technology in instruction.

If we adopt technology directly into the educational process, what should be included in the teaching machine programming (as an example of technological media)? Should it be a <u>new</u> curricula? There are three main points of view on this. One states that only the newest advances in course content should be programmed. Another view is that fundamentals have not changed and should be included. A third agrees with the new curricular efforts but cautions against the scholar-specialist doing the programming.

Technology and Instruction

Any discussion dealing with instruction seems to have to deal also with theories of learning and motivation. Currently there are two, the reinforcement theory and the cognitive or perceptual field theory of learning. The main point here is to remind that in the experimentation with instructional method and selection of instructional materials there are basic concepts and their consequences to be considered. Certainly the problem of the way in which learning takes place must have much more careful study as technology is introduced into schools.

One area of technology in instruction that has gained interest is machines and programming. Much of the theory behind this area is the result of experimentation with animals; hence, some problems arise in applying results to the classroom. A few are

1. Developing patterns of conformity and possible elimination of creativity and originality.

2. Possibility of fatigue and boredom in the continued use of machines, especially over many years when the novelty wears off.

3. Possible destruction of the interrelationships of different fields of knowledge due to narrow tracks demanded by programming.

4. Increasing the development of the following, unquestioning, accepting type of personality.

These problems may not be inherent in the machine, but they seem to lend themselves towards these directions.

One of the major problems in classroom practice is the extremely limited funds available for materials, and due to cost of these devices and their programs this problem tends to be intensified.

Probably one of the most important problems is that of the role of the teacher. Though a really good teacher may find his effectiveness greatly increased by appropriate devices and materials, it does not seem that he can ever be replaced by them.

The Ungraded Primary Plan

The Ungraded Primary Plan, though not new to our history of education, is making its emergence upon the horizon of education today as a means whereby attention may be given the growth and development of the child in a pattern of continuous progress.

Instead of following the vertical aspects of the curriculum in a grade to grade manner, the idea of longitudinal development is considered. In brief, during the first three years beyond kindergarten, grade levels are abolished and the child proceeds along small steps known as levels. After careful consideration by teachers of children's maturation levels, they are placed in groups according to their abilities. In many instances the grouping is based mainly on reading ability. However, social and physical maturity are also given consideration.

One of the chief proponents of the plan is that neither promotion nor retardation is included. Rather, the children proceed at their own ability rates. If a child has not mastered material completely, he does not have to repeat what he has already done, but may continue to progress. If a child grasps material quickly, then he is permitted to advance.

Other aspects of the program include: (1) Teacher cycling, where the teacher continues with a group for more than one year, (2) Team teaching, where children work with more than one teacher, (3) Curricular balance, the exceptional child--either gifted or retarded--is given ample

consideration, and (4) frequent parent-teacher conferences to report on the child's progress.

The Ungraded Primary Plan provides for continuous growth along unbroken lines with maximum flexibility for grouping. Technologically, its small steps or levels give it a programmed aspect for aiding the child's growth and development.

The Effect of Technology on the Curriculum

The primary responsibility of the elementary school today is a balanced learning situation resulting in intellectual effectiveness. Developments in communication have revealed great potentials for making the instructional process more effective and efficient; no task is more urgent than assessing the role of new educational media in improving instruction in the elementary grades.

Educators cannot ignore these developments. The child who comes to school today is not the same child as of yesterday. The impact of change in the world through communication has changed him greatly. However, his experiences are to a large degree secondary and vicarious. Imperfect absorption results from these secondary experiences and this leads to distortion and misunderstanding. Education must build on these foundations and in the process correct and extend these learnings.

The instructional process is the heart of education and instructional materials can give shape and substance to the curriculum, control its content, and vitally affect the teaching-learning process. Most recently, new media-educational television, language labs, video tapes, and teaching machines have offered important potentialities. These new media make

it possible to study the school program and cut unnecessary and repetitious drill by teaching some skills more effectively. Spelling and isolated parts of arithmetic have been well-adapted to programmed learnings at the elementary level. Foreign languages are fast finding a place. Communication skills become more important than formal grammar. Science has taken an important place since the fifties. There is a need now to find the balance between science and the social studies. Problem-solving and critical thinking are important facets of these years.

Machines will not develop social skills through interaction and would soon create an imbalance. We have learned that all areas are important. Schools should educate for life!

Cautions in the Use of Technological Devices in Elementary Schools

The elementary level of education warrants great cautions in the employment of technological devices without carefully weighing and recognizing the implications at this level. The EPC issues the statement that changes at this level are likely to bear greater consequences for the lives of pupils than equivalent changes at other levels. They also take the stand that the teacher, more than any other factor, determines the quality of elementary education. These warnings certainly point out the need for proper preparation and evaluation before introducing these new methods and devices at this level.

Trump states that most schools already possess more technological aids to instruction than they are using. Schools are buying devices without a planned orientation for their uses and without consideration

of financial or instructional implications.

It has also been indicated that teaching machines have limitations so that they will likely have little positive effect and possibly negative effect on the creativity of students. Many of the new devices foster subject-matter mastery concept of education which is not our sole objective in our instructional program.

The greatest need at the present is for research to find out to what degree this new media tends to build in restriction, inhibitions, and various other deterrents. We also need to determine if this new media inhibits group interaction and how important this is to growth and development at the grade level.

The basic caution is whether technological media will improve a child's way of thinking and developing as a whole individual and that our emphasis be focused upon the child as a human being rather than emphasis on commercial values.

Implications of Technology for Reading

Technological instruments have been used by reading teachers for almost twenty years. From 1809 to 1930 eleven different patents for reading machines were filed. The present day devices such as the tachistoscope, the pacer, and the controlled reader were developed during World War II. Reading teachers use these devices discreetly.

Most reading teachers balance their curriculum with these devices as a part of the total reading program. Much research on adequate reading programs point up the fact that a broad and varied amount of reading materials including devices, audio-visual aids and programmed laboratories are necessary.

Studies have been made on these devices and the following conclusions have been ascertained. They all motivate and teach in varying degrees. Some are better used for average or accelerated readers and some can actually handicap a very rapid reader. By using the reading teacher's experience with technological instruments as a base, we can predict that the new technological instruments such as machine teaching, closed circuit T. V. and programmed textbooks will prove invaluable if we use them in moderation or as parts of a broad program of instruction.

Because students are individuals who bring to the learning experience their varied experiential backgrounds, the machine or program will have to adjust to these differences. Some obstacles that are apparent to the reading teacher include the elongated range of reading ability that occurs on the secondary level, and the over-emphasis of reading and writing skills at the expense of listening and speaking communication skills.

Impact of Technology on Foreign Language Curriculum and Instruction

Either directly or indirectly the rapid advance of technology has brought about a dramatic change in the curriculum and teaching of foreign languages. Modern capacity for mass, worldwide communication has been a major underlying force causing us to re-evaluate offerings, goals, and methods in foreign languages.

One outstanding trend during the last decade has been that of a general move away from emphasis on skills in reading and writing toward increased emphasis on skills in listening and speaking. Educational television has facilitated foreign language instruction at the elementary

school level with an emphasis on the conversational approach. Administrators and teachers have used new audio-lingual devices in an effort to compensate for the lack of sufficient qualified language teachers. That there has been a degree of success is indicated by such phenomena as the rapid expansion of instruction in Russian.

The most noteworthy technological innovation to stimulate foreign language teaching is the language laboratory. Some consider this instrument a painless panacea for learning languages, while some consider the laboratory method the worst blow dealt language teaching "since the building of the Tower of Babel." (6--p.382) Most language teachers, however, see the laboratory as a challenge to them to evolve a more effective methodology for its optimum integration into current practices. The laboratory does not insure that linguists will be produced, for it is the use of the laboratory that counts. Studies of the utility of language laboratories are somewhat inconclusive, but it seems clear that present utilization aids students in reading, vocabulary, and grammar more than in auditory comprehension and speaking ability.

Impact of Technology upon Industrial Education

Science and technology have so expanded knowledge in all areas of everyday living that success in today's society requires specialization. The individual must, however, have a basic understanding of the sociological, economic, and political foundations of our way of life and the implications of his special contributions to the total culture. To be well educated today, the individual must have an understanding of two important segments of this culture, science and technology. This implies

that science education and industrial education must fulfill a general education purpose in addition to providing special training for the individual's avocation, vocation or profession. Television, audio-visual materials, instructional machines and programmed instructional materials can contribute greatly to the development of insights and understandings of science and technology in relation to our total culture.

Scientific organizations and industry have already proven the feasibility of using closed circuit television, audio-visual equipment, and other technological devices for instructional purposes. Their use coupled with new instructional machines and programmed materials in advanced science education, in vocational and technical education courses should help to alleviate the shortage of specialists in these critical areas of industry and science. In addition to the training of youth for their place in the scientific and technical trades and professions, many of the currently unemployed segment of our society could be retrained for new responsibilities in our scientific technical culture.

Limitations and Dangers of Technology

Skinner's linear programs are based on what a hungry rat does in a box and imply two questionable assumptions:

1. Learning can be completely planned and controlled externally. (this smacks of indoctrination)

2. There are no individual differences in rate of learning.

All programmed material seems limited to "agreed upon" knowledge, and material that can't be questioned. Does this promote uncritical acceptance?

Mass techniques can't interact at the human level, and thus can't sense motivation or readiness, nor promote social development through direct contact.

All devices seem unable to stimulate imagination, broaden vision, build individual confidence, use problem-solving in a social context, teach skills in planning or communicating.

In curriculum, these devices seem to guarantee increased rigidity because: they may become the curriculum; experts become concentrated and perhaps commercially controlled; the cost must be amortized before revision can be considered. As a bigger area is covered and "agreement" is more important, the curriculum becomes more bland, and perhaps less vital and interesting.

Home use of these raises a galaxy of questions in itself.

Grieder says that a binge on machines will result in the "dehumanization of teaching" unless the role of the machine is defined. He feels that machines can never take the place of enlightened and capable teachers, but for some kinds of tasks they may be just what the doctor ordered. If good teachers can extend their powers by use of mechanical aids, let's use them.

SECTION III

ADMINISTRATION AND SUPERVISION

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ADMINISTRATION AND SUPERVISION

Introduction to Section

Many persons living today can recall when the schools were concerned primarily with teaching the three R's to only a small percentage of the school-age population. The drop-out rate was high. It was expected and desirable because of the demand for unskilled labor. The textbook was the teaching tool. Schools catered to the verbally talented student. The sole purpose of the high school was to prepare students for college. As the needs of society have changed, the role of the school has changed. Development and conservation of human resources have become a vital problem in our society.

As the societal demands upon the schools expanded so did our knowledge about children and how they learn. These changes led to changes in the curriculum and in the methods and materials of instruction. Today our concept of an adequate instruction program is totally different from that of a generation ago, and we give at least lip service to the necessity for a variety of methods and materials including so-called audio-visual materials, or the new media.

Administrators must be aware of and open-minded about new technological developments. Education has been too slow to meet the changing demands of the modern world for we are living in an era of fantastic changes although no one is really "convinced".

Technology has presented audio-visual methods for mass instruction and teaching machines for individualized instruction. It would

be foolhardy to say either is the complete answer for teaching, but both bear investigation and experimentation. Technology will increase the cost of operation of our schools, but perhaps it is the business of the future to provide the best educational program possible regardless of the cost.

Freedom and Authority in Planning for Education

In this age of technology and automation in education, careful consideration must be given as to what part freedom and authority can play in planning for education. The degree of participation and the degree of choices available to people in any situation are the criteria for determining the degree of authoritarian or democratic behavior. The degree of choice and the degree of participation are interrelated in that a person's area of choice is limited if he is denied participation.

One way in which participation may be measured is by the study of the dgree of existence of invidious distinctions. Invidious distinctions are non-demonstrable ideas which are used to justify some particular power arrangement. The major invidious distinctions in educational practice are based upon race, age and status. Thus it appears to us that in planning for better education in this technological age, definite consideration should be given to teachers and pupils in setting up a program of education.

Necessity for More Teacher Planning Time

We know that it is necessary for teachers to have adequate time for planning if they are to be able to meet the impact of

technology on education today. Curriculum must be relevent to new needs and new knowledge brought about by social and scientific change. Courses and textbooks become obsolete from one year to the next.

We, as administrators, need to help teachers find ways to develop and utilize their particular professional skills. Perhaps programmed materials can be used to increase the effectiveness of a teacher by relieving him of such routine duties as oral drill, reviews, and some of the tedious work correcting papers so that he will have more time to devote to lesson planning, individualized instruction, and the creative aspects of teaching. The learning of content has been one important goal of the school. By using a machine to accomplish this goal, the teacher is freed to apply his professional skill to non-routine activities. There are currently available standard curriculum courses in spelling, English, algebra, language, arithmetic, physics, and other subjects.

Knowledge is increasing at such a rate that constant evaluation of teaching materials must be made in order to discard outmoded ideas and to replace them with more recent findings of research. It takes much time to adapt new and forward-looking ideas to the varying levels of difficulty, interest, and ability of a particular group of students.

Most principals are on duty several weeks before the teachers and children start work in the fall. If a teacher could be employed four to six weeks or even one week before school actually begins, she could accomplish a great deal. She might well spend her time collecting

materials, previewing films, trying experiments, test-running field trips, doing resource reading, constructing valid tests, and working through curriculum and programming materials before the children arrive. She could use some of this time to good advantage by acquainting herself with the children's records in their personal folders.

If programmed learning proves to be as effective as indications show that it might be, the teacher should have more time to enrich the resources for learning, to hold special parent-teacher conferences, to encourage independent learning on the part of students, and to supply special materials to meet individual needs and differences.

Blocks-of-Time for Laboratories, Practical Arts, and Creative Activities

The secondary schools will have to adjust to the demands of new technology. Long periods provided by blocks-of-time of one and one-half hours to three hours could be utilized in the senior high school. Three-hour periods would be useful for physics and chemistry laboratories. Two-hour periods would be needed for the arts and for biology. Field trips would require three hours or full-day periods of time.

The question is to find the longer blocks of time. One method would be to lengthen the school day to seven hours or more. This would allow for four classes plus a three-hour period each day. This three-hour period could be used for block-of-time needs as well as for study. Recreation would be outside the seven-hour day. A second way would be to schedule the senior high school much as college freshman are scheduled. Monday, Wednesday, and Friday would be used for hour long class periods. Tuesday and Thursday would be used for block-of-time needs.

Using this college method would also work well in arranging lecture periods, small class needs, and guidance needs. Grades lower than the tenth would not attempt this venture. This kind of arrangement would work especially well with accelerated groups. Public relations would have to sell the idea of more unsupervised time for high school pupils.

The individualized learning time needed for teaching machines would be incorporated into the large blocks-of-time in the senior high school much as library research and study periods are now. The machines would be placed in a room designed for this purpose, probably by being divided into cubicles. Students from the junior and senior high schools could be assigned or volunteer to use a machine during part of his study time. The machines would be most effectively used to accelerate learning or to remedy defects. These machines would also be most indispensable for make-up work.

In the elementary schools teacher aides could have charge of sections of the class working with teaching machines. These would probably be small hand machines which could be used on a desk or table. A separate machine and research room could be provided. This separate room would be divided from the main class room by a glass partition so that the teacher would retain control of all segments of the class. The glass-partitioned room within the elementary classroom could be used by a teacher aide, teaching machines, and by pupil committees. For the elementary school, machine learning generally would take place during class time.

Flexible Class Scheduling

Basic to all planning for the operational details of any school must be the setting forth of the goals of that school. First of all we must define, "What is our school trying to do?" Then the program can be devised that will best achieve those goals.

The rational powers of the human mind have always been basic in establishing and preserving freedom. In furthering personal and social effectiveness they are becoming more important than ever. They are central to individual dignity, human progress, and national survival. The society which develops best the rational potentials of its' people, along with their intuitive and aesthetic capabilities, will have the best chance of flourishing in the future. To help every person develop those powers is therefore a profoundly important objective and one which increases in importance with the passage of time. By pursuing this objective, the school can enhance spiritual and aesthetic values and the other cardinal purposes which it has traditionally served and must continue to serve.

If the goal set forth above is indeed the central purpose of American education, then it follows conclusively that great attention must be paid to the development of the rational powers of every individual citizen. Can this rational power be produced except by the individualization of instruction to a far greater degree than we have hitherto attempted? Must we not strive to produce in every student the abilities of thinking independently, assuming responsibility for his own actions, and gradually being weaned away from the outside motivation and

dependence upon teachers who may frequently be called upon to "spoonfeed" him.

The departure from customary scheduling practices offers many hazards to the principal who now breathes a sigh of relief when all students are compartmentalized for the school year. The prospect of continual schedule revision is so contrary to custom that most secondary school administrators hesitate to begin. The heavy hand of tradition, the rules and regulations of state departments of education and accrediting agencies, the expectations of faculty and patrons steeped in ways in which they were taught somehow deter many who would like to turn to the new techniques.

To produce the rational, responsible, independent individual, Trump suggests that beginning at age twelve when the student begins junior high school work he should spend about one-third of his time in large group instruction; one-third in small group instruction; and one-third in independent study. The proportion of time spent in large group instruction will remain fairly constant during the remainder of the secondary years; while the small group instruction will decrease to about one-fifteenth of his total time; and time for independent study will increase ultimately to about two-thirds of his total time. It should also be noted that in each instructional year there is extra time for out-of-school effort in independent study in educational facilities that are open and supervised aiitional hours, days and weeks. The total picture is one where students gradually assume greater responsibility for their own independent study under the direction of the

professional staff. This is certainly a far cry from the current coddling, urging, pampering techniques that occur all too frequently in our present secondary schools.

Size of Instructional Units

In light of the technological advances of this age we are privileged to be standing, somewhat shakily, on the threshold of educational advances that are unequalled in the history of education. How long our state of trepidation will hold us at the threshold depends upon how quickly our philosophies and mental evaluative processes can be retooled to meet the challenge.

Our prognostications for implementation of these new advances must, because of a dearth of factual knowledge, be conjectural. It can be emphatically stated, however, that the size of instructional units will: (1) bear little or no resemblance to the traditional pupil teacher ratio of 25 or 30 to one; and (2) be governed by facility, (only in isolated instances of financial munificence can the ideal of "program dictating facility" be realized).

Various writers in their consideration of instructional units of the future do agree on the following:

1. Size of the unit should vary with what is being taught and why.
2. The role of the teacher, in relation to the newer media, must be reexamined.
3. Scheduling must be unfixed and flexible lest it act as a deterrent.
4. Units must be adaptable to heterogeneous and homogeneous groupings.

5. Teacher training institutions must provide adequate bases for their graduates to proficiently meet the challenge of technological implementation.

6. Units will vary in size from one or two pupils upwards to as many as is feasible according to facility, subject, and teacher. The greatest teacher of all taught thousands in His Sermon on the Mount.

The ramifications of buildings, finances, program, administration, teachers, and students will influence and in most instances circumscribe the instructional unit.

The Affect of Technology on Administrative and Supervisory Functions

The challenge of technology to the administrative and supervisory functions of education is only beginning to have an initial impact. Its full significance will not be known until the related problems resulting from implementation can be identified and dealt with directly.

Educators generally agree, however, that innovations in instructional practices will require a large measure of cooperative study and consultation with professional staff members during each stage of development. This procedure is considered essential since use of the new media must be integrated with the existing program in instruction, curriculum development, inservice education, and the instructional materials program.

In addition, and perhaps most important, there must be assurance that the philosophy, purposes, and goals of the school system are protected and preserved with implementation of new media. The purposes of education as revealed in the curriculum and instructional program of the school, must determine which instructional media will be used and how

they will be used.

There appear to be five major areas that will challenge the best judgment and require additional attention of personnel in supervisory and administrative positions who are planning to incorporate new educational media in the instructional program:

1.	STAFF	Including the selection, training, assignment, and in-service participation of staff members
2.	ORGANIZATION	Provision for more flexible instructional patterns and procedures
3.	FACILITIES	Establishment of specific goals as a guide to local standards to meet technological needs
4.	FINANCES	Allocating of limited financial resources to support a variety of instructional approaches
5.	PROGRAMMING	Additional planning and evaluation as a requisite in maintaining a balanced curriculum

Counting the Cost

It is foreseeable that many of the mass techniques, automated teaching devices and programmed instruction will have a definite place in our school programs. Therefore the school administrator has the responsibility of examining and studying the technological media in order to make wise recommendations to superiors or boards of education. In addition, school administrators must have personnel ready and willing to accept and to use these techniques and devices.

It is reasonable to assume that the costs of operating schools will increase whether or not any changes are made. Teachers' salaries will be higher, more money will be spent on research, teacher assistants, curriculum specialists, buildings, in-service education and other things

Summary--Coordination of Activities

There seems to be little doubt in reading the preceeding pages concerning the technological break-through in education that greater emphasis must be placed on coordination of the over-all educational program. Coordinating all activities will have to include correlating facilities, personnel, time, schedules and class size.

Technological innovations such as teaching machines, programmed learning, language labs, team teaching, scrambled textbooks, overhead projectors, large group instruction, small group instruction and flexible scheduling, as well as designing school buildings to house these changes, will involve a high degree of corrdination. The administrator will need to have a general understanding of all these aids to education to better inform the staff, board members, and community.

In coordinating and planning the over-all school program, several basic principles must form the guide-lines: (1) children learn from the behavior pattern emerging from an activity; (2) a single experience may contribute to the pupil's development in many different ways; (3) pupils differ in their rate of growth and each stage of growth has its own readiness requirements; (4) pupils learn only those behavior patterns that bring satisfaction; (5) curricula planned with a series of isolated courses, not correlated with each other, are inadequate.

Technological advances which can accomplish the above principles in a more effective manner should be a part of the school program. Change for the sake of change is by no means advocated. The changes will have to do better that which is being done in the present day conventional

school in order to justify a change.

Coordinating the school of tomorrow which utilizes technological advances does not place the responsibility for coordination on one person. All staff members, teachers, supervisors, directors, principals, superintendents, and boards of education will have to keep abreast with the technological break-through in education to effectively realize the full potential that ispossible.

SECTION IV

BUILDING DESIGN

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BUILDING DESIGN

Planning for Technological Change in Education

The significant strides made in the application of technology to the field of education, even at its threshold, suggest a tremendous impact upon tomorrow's school buildings, staffs, and programs. The need for renewed emphasis upon the principles of good planning in the design, construction and staffing of tomorrow's schools, has been brought into sharp focus by this development. The functional school building which reflects its developers concept of desirable educational goals will be most acceptable if these goals are developed through a set of educational specifications which have been evolved by the application of established guide lines of good planning. School buildings and programs mirror the community conscience as it relates to these falues. As one writer states "The school building and program reflects the ambitions, the hopes, the aspirations, and the dreams of a people that are striving to move forward."

Planning should be based upon the premise of an improved educational service. Total educational goals need to be identified. The designs that are enacted should be predicated upon the objective of upgrading and improving the quality of the educational program within its total frame of reference.

Planning should take cognizance of the fact that present educational structure, both in design, staffing and program, has tended to be traditional and resistant to change. New ideas and media must be

carefully evaluated in relation to this firmly entrenched tradition.

Planning in educational specifications must provide for desirable change in instructional materials, media, method, and perhaps even in basic traditional goals. Impending change must be recognized as a social fact.

Planning should note that historically the introduction of new educational media has tended to create programs which are flexible and adaptable, therefore flexibility in design, construction and programming must be the keynote in the schools of tomorrow.

Planning must include the entire human resources of the community: the Board, the total Staff, Consultants, Architect, Community Lay Leaders, and the PTA. The whole community must have an opportunity to contribute to the basic planning process.

Planning should develop definitive educational specifications designed to add quality to the educational service. These specifications should be easily and quickly related to the attainment of established goals and should be subject to change where a valid appraisal would indicate change is needed.

Planning should relate these educational goals to the function of the new media in the learning process and should spell out the functional aspects of these media for the Architect to be used in the interpretation of design for tomorrow's classrooms.

Planning should relate these "specifics" to the public so that there may be developed a full appreciatopm amd acceptance of the educational value of these new media that will, no doubt, profoundly

affect education.

Planning should relate the educational specifications e ncompassing the new media to a careful cost analysis underscoring both the retention of and improvement of quality. Introduction of new technological media will no doubt alter the design and increase the cost of staffing and operation of the school plant. A leading architectural firm has indicated the suggested change in school design will increase costs as much as thirty-five percent. This increase is not too significant when educational building costs are compared to building costs in any other field. It will become the proper function of educational planners to interpret these costs in terms of improved quality of education. The lowest square foot cost in design and construction cannot be accepted as the sole yardstick in which to measure tomorrow's schools: a more valid yardstick will be to determine if there has been an improvement in the learning activities of the pupils being served.

Greater Flexibility

The word flexibility as related to school buildings may have a variety of definitions depending upon the reader's frame of reference but for the writer's purpose flexibility shall simply mean "planning for change". Planning, therefore, is the vital element that will insure flexibility. All persons who hold or share the responsibility for school building planning, design, financing, etc. must initiate long-range plans for the development of particular school buildings as well as the total school system. Every consideration must be provided in terms of the existing school program, yet planning should allow for

future educational programs which may be quite different from the one for which the building was originally constructed. School buildings constructed today shall probably serve communities through the twentieth century and into the twenty-first centure in an era of an expanding and advancing technology. The educator's "crystal ball+ will not provide adequate information concerning the school program ten years hence, but new educational research may provide hints or clues which will give him the insight to include as much flexibility in building design that finances and circumstances will permit.

Concern for flexibility should begin with the selection of a building site since the total role of the school must be determined as related to the community. In many new suburbs school buildings often become "community centers" since they represent the only buildings beyond modest size. It appears reasonable to suggest that suburban school districts should purchase over-size land sites (particularly if raw land prices prevail) so that future school-community programs can be developed. Such programs might include indoor-outdoor swimming facilities, library, parks, physical education sports, picnic facilities, and other activities.

In regards to new methods of instruction, the participants in the Work Conference at the University of Denver have been privileged to see and hear first hand developments and information concerning the further application of technological theories and devices in education. If closed circuit television, teaching machines, grading machines, overhead projection, team teaching and other new developments survive

exhaustive testing and if all or part become accepted practices in our school systems, therefore our school buildings must provide great flexibility. The term "room" shall be replaced by such terms as "space" or cubicle. A large space may house as many as 300 students in a classroom and a cubicle of 24 square feet may house a single student and not more than four students. Large spaces should provide movable partitions so that smaller spaces can be created whenever needed. This concept requires self-supporting structural frames thus eliminating wall-bearing structures. Lighting, ventilating, and heating must be carefully designed and coordinated to relate with planning for change.

The Committee would therefore suggest these recommendations to school districts that presently have new buildings under construction or on the planning boards: (1) Install conduit and wire throughout the building for closed circuit television. The material and installation cost is small and the conduit is neatly contained. Future installation whenever televised instruction is adopted would be costly and unsightly. (2) Many additional electrical outlets should be placed in the classroom floors (stubbed in) and concealed by floor covering, but available whenever electronic devices are adopted. (3) Windowless rooms or spaces, well lighted should be considered and cost savings for windows utilized for ventilation and air conditioning. (4) Conventional size classrooms should have movable partitions between them rather than the standard, solid partition. This feature would permit experimentation with team teaching.

School districts planning buildings in the near future should

take a long, hard, look at the latest research in instruction and building design in an effort to "build in" greater flexibility for new educational developments that lie ahead.

Dual Use of School Buildings

Many school buildings serve a variety of uses if we think in terms of school-community usage. Use of auditoriums, classrooms for adult education, committee meetings, etc. plus sports facilities, indoor-outdoor swimming pools, the joint financing and usage of school buildings by school boards and recreation districts. Again size of land site is a prime factor in terms of dual usage.

One obvious concern for dual usage in school buildings is that of light control so that the common classroom can easily convert to a theatre or projection room for use of television, films, etc. Movable partitions provide opportunity for small space instruction or large group areas depending on need. This is a requisite for team teaching. The cafetorium is one approach to dual usage of both cafeteria and auditorium and it does save money but compromises are made in flooring, acoustics, etc. The gymnasium-cafeteria combination is often developed in elementary schools but such an arrangement is most controversial among educators. The cafeteria-study hall is another debatable practice in education.

On examination of some twenty-five books and periodicals, little space has been devoted to dual usage of certain areas. It seems likely that flexibility is paralleled to duality and much has been written concerning flexibility. One danger in overemphasizing duality is the misuse

or sacrifice of one program over another. Teacher acceptance and usage is another consideration. The complexity of changing or converting a facility on a dual basis must be considered. An idea on the architect's planning board may prove unsatisfactory in practice, however, mistakes will sometimes occur in planning a building regardless of the time and care devoted to such planning. In summarizing dual usage of school buildings, sound, advance planning is the keynote which should be based on recognized need, practicality, and ability to finance.

School Buildings

Present thinking in educational circles indicates that much of the present learning that takes place in conventional classrooms of thirty students can be learned just as well in much larger groups. It is also thought that learning can be effectively accomplished through student independent study. On the other hand, thirty students are too many for effective group interaction with some learning materials. The Trump Report suggests that forty per cent of the materials taught in present classrooms could be learned just as well if taught by a good teacher to groups of 150 or more students. Another forty per cent could be learned just as effectively though independent study, but twenty per cent of the instruction should take place in groups of students numbering fifteen or less.

If this reasoning is valid, there must be some revolutionary thinking among those responsible for planning school design. It becomes apparent that the traditional 30' x 30' classroom cannot accommodate programs using this educational philosophy and that buildings must

be designed with large spaces, small spaces, and areas for independent study. This rapidly developing philosophy coupled with many new technological discoveries necessitates incorporating other changes in school design. Provisions must be made for the storage and maintenance of a great variety of instructional materials. Included in these materials are books, periodicals, pamphlets, pictures, models, slides, microfilm, records, tapes, maps, charts, screens, radios, recorders, teaching machines, television receivers, and projectors. The storage must be close to areas most frequently used and built with provisions for some portable storage units, with both open and closed adjustable shelving, and arranged in such manner as to avoid congestion. The area must be fire resistant with adequate ventilation and temperature control.

The problem of providing areas for large group instruction has been attacked by school districts in a variety of ways. While some schools have used folding partitions to divide large areas into several rooms, thus providing flexibility accommodating groups of 150 students in individual rooms or opening partitions to combine units, others have felt that partitions currently on the market are inadequate from the standpoint of cost. Jefferson County, Colorado is completing a new junior high school with units designed to meet the space problem for team teaching. A large space in the shape of an isosceles trapezoid measuring approximately 36' and 52' on the bases with an altitude of 48' is divided into three classrooms using glass partitions. The rooms are connected by a speaker system in order that students may observe and hear the demonstration teacher.

While there seems to be much agreement among educators that the school of the future will be quite different from the schools of 1961, there is a great deal of confusion as to the direction education will take. Will there be more programmed learning with teaching machines? Will most schools move more rapidly toward team teaching? Will television be used more widely? There are many unanswered questions in education and until more definite answers are provided, school buildings must accommodate present teaching methods and must be flexible enough to be converted easily and economically for adaptation to future trends. Although there is little question regarding the need for large and small spaces accommodating a variety of instruction plus well planned storage, the extent and proportion of these areas cannot be safely predicted. In this state of confusion, we can only guess what the future will hold and construct buildings to meet present and anticipated needs as we see them now. We can, however, avoid such things as supporting partitions and expect to adjust room sizes to accommodate revised methods in education.

Library Space

Libraries in schools of tomorrow will serve not only as they do today, but will greatly expand their services to students and faculty. It appears the school of the future will place greater emphasis on the development of individual student responsibility for learning and growth in intellectual inquiry.

In planning the library, it will be necessary to determine the functional aspects of the area. The services which the library can provide in relation to the total educational pattern of a school program

are of paramount importance in its planning and development. Equipment should include the following major items: circulation desk, card catalogs, magazine and newspaper racks, stools, bulletin boards, legal size files, book trucks, atals standards, and record and visual aid storage cabinets. Book shelving should be figured at the rate of eight books per lineal foot. The minimum number of books in the average secondar school library should total between ten and twenty books per student. The height of the bookcases should not exceed seven feet in secondary schools. All shelving should be vertically adjustable. An area should also be provided for the display of picture books and magazines.

The seating capacity of a secondary school library can be determined only after a careful analysis of the programming of proposed offerings. In the average situation, it has been found that the reading room should seat from ten to fifteen per cent of the high school enrollment; but not exceed 100 or 150. In large systems more than one reading room may be necessary. Informal reading areas for various age levels help create a desirable atmosphere in any library.

Another important aapect in the planning and construction of any library is the control and distribution of natural and artificial lighting. Library tables should be arranged so that readers will not face windows or unshielded sources of light. Acoustical treatment of floors, ceilings, and exposed wall surfaces is also desirable.

Adequate work and storage space, outside the reading room, should be provided for the librarian. Activities other than quiet study tend to develop an unfavorable attitude in the library.

No research in regard to the possibilities of future libraries would be complete without the comments of Finn and Trump. Trump states that the heart of the school of the future will be its learning resources center, which will include a variety of spaces for students' individual or group reading, viewing, listening, and writing, or for various kinds of laboratory work in all subject areas. These spaces or cubicles will vary in number according to the student population. It is suggested that the conference rooms be designed to accommodate no more than about five persons. Also in or near the library will be several sound-proof booths for study with electronic devices and a larger room for automatic instruction devices. Cubicles might also be constructed along a wall of the library. Such an arrangement is inexpensive and would provide the school with an opportunity to try out such areas for independent study.

Tomorrow's schools will have, in addition, an instructional materials center, where teachers, individually or in groups, will plan and develop instructional materials, confer, and perform other professinal tasks with the aid of assistants. This center should contain professional books and magazines, and provide an extensive pamphlet file and card index on a variety of instructional aids, films, charts, posters, and pictures. In some school libraries the main card catalog cards books, periodicals, and all audio media. Colored cards are used for each type of media such as sound films, filmstrips, records, slides, and tapes.

Today's libraries are too much on the fringes of education.

Tomorrow they will be in the main stream. It will be difficult to identify the library in the conventional sense, because its services will permeate the totality of education. In the library, time, space, and materials will be the servants of instruction rather than determinants of the pattern. In view of the expanding concept of the role of the school library, it is not surprising that many older buildings do not provide adequate space for a modern library program.

The Year-round School

Look at the time. By the same hour tomorrow, there will be 10,000 more people in the United States. There will be 10,000 more the next day and the next....There was a time when we saw signs such as "Johnstontowm, pop. 4,000--Watch us Grow." Signs like this have disappeared because the population is perhaps in the area of 40,000 now. This surge in population brings about many inadequacies and problems, the main one here being that of our schools. The schools are bulging. We find that we cannot build buildings as rapidly as the children arrive. Double and triple sessions have been tried as possible solutions, but they do not seem to be the answer.

Numerous approaches will be made to adding new dimensions to the educational program of the future, but perhaps none will be more effective than that of extending instruction to the year-round program. Such an approach is sensible and economically sound. The school building already exists and its operation is under way. The teaching staff, which is by all odds the community's most important asset, is already mobilized. The expenses of general control involved for the most part

in administration, and fixed charges continue whether the school is in operation or has its doors closed for a long vacation period.

Operating the schools on the basis of a staggered enrollment for the purpose of reducing cost would not add any quality to the educational program. This particular experiment has been tried over and over again, and there are doubts as to whether it results in any worthwhile financial savings. So, we may not reasonably anticipate that much attention will be given to the twelve month program with a staggered enrollment.

The Committee sees the development in an increasing number of communities, a year-round school program which will be organized and operated in the following manner:

1. All children in the community will be required to attend school for the usual 180 or 190 days as in the past, but during the summer opportunities will be offered for children to attend school on a volujtary basis. Carefully planned programs will give them a chance to go above and beyond the work offered in the regular school program, to shorten the length of time required to graduate by taking extra courses in an accelerated program, or to do make-up work where it is essential; in a word, to engage in any kind of learning activity that seems desirable. It may be expected that approximately one-third of the children in any typical community will take advantage of this opportunity.

2. All teachers will be employed on a twelve month basis like other employees in industry, government, and business institutions. Approximately one-third of the teachers will be engaged in offering classes to the summer school students. Another third of the teachers will be involved in instructional planning and curriculum improvement. It is at this point that the "pay dirt" for educational improvement will be richest. We cannot expect to add quality to the educational program except through instructional planning and curriculum improvement. Under our present system, we have not allowed more

> than a bare minimum of opportunity for such creative work. Another third of the teachers, through carefully planned programs, will take advantage of first hand opportunities with business, industry, and governmental agencies, with perhaps some exchange in cultures of foreign countries.

Study and Conference Areas

Whether or not to provide small study and conference areas is the problem that must be faced by those responsible for planning the buildings that will house our future students. The planners must first decide if the advantages are worth the cost. This problem and many others have not yet been seriously researched by educators and architects.

Students attending a school employing the newest advances in education could reasonably be expected to utilize these areas and would be hampered if they were not available. One must assume that this student would be sufficiently mature and motivated to utilize to its utmost this departure from the traditional. These small study and individual areas would be used for creative thinking and independent study.

Dr. J. Lloyd Trump advocates individual cubicles and small group study areas.[1] He feels that the small group areas should accommodate fifteen people and that eight of these rooms for a high school of twelve hundred people would be sufficient. He would install three hundred cubicles for this same size school, thus providing every four students with an individual study area of twenty-four square feet.

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[1] J. Lloyd Trump and Dorsey Baynham, Guide to Better Schools, (Chicago, Rand McNally and Company, 1961), p. 36.

The physical make-up of these cubicles could vary to a great extent. They could be designed economically or lavishly, depending upon available funds. An elaborate cubicle would have the necessary twenty-four square feet of space, a door, window, air conditioning, storage space for books and machines, intercom equipment, and would be sound proof. It would be desirable to have these cubicles located next to or in the library so that this vast amount of material could be easily obtained by the student. They could also be located along the halls for easy access by the students wishing to use these areas. They should be designed regardless of their location so that students can have easy access to them. Inaccessibility should be guarded against. Should cost limit one's dreams then simple plywood stalls could be utilized in a regular size room with a minimum amount of equipment.

In addition to small conference rooms for students, storage rooms for all types of audio-visual equipment should be readily accessible to all students and teachers desiring their use. Previewing areas for films, tapes, slides and other machines would have to be an important part of our new building.

Office space for the large staff of teachers and secretaries would also be desirable. Teachers, in keeping with their status as members of a professional body, need private offices where they will have an opportunity to do reflective thinking and planning. These offices could be small rooms situated around a larger open area used by their secretaries.

The following points seem pertinent as summary: The "super"

building as visioned by Trump is possible if we are willing to pay the price. Undoubtedly, it is much different than anything we now have, but small study areas and cubicles have merit and will be adopted at least in modified forms in our schools of the future. The office space that has been considered an essential for administrators will also be a neccesity for teachers. This new building concept will be another milestone in the educational process.

Offices and Conference Rooms

Most individuals, whether teachers or students, desire and frequently profit by having an individual working station. To the extent that new technological developments make necessary a larger administrative and supervisory staff, more office space for such individuals must be provided. This need has been pretty well recognized in many of the recent buildings. The offices are well furnished and attractively decorated as well as being adequately equipped.

The teacher who is part of a team, who is responsible for programming for a machine, who must get the most out of a myriad of teaching devices, will of necessity need more space in which to work. Teacher work rooms with teacher built-in stations are now being added to some of the newer buildings. One writer[2] recommends thirty teacher offices for a 1,200 pupil high school, but this number neglects more than half of the employed teachers. The school of the future should furnish office space for each teacher where he can have all his working

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[2]Ibid, p. 36.

materials and privacy for his best work.

Even now to new buildings are being added an increasing number of conference rooms. Near the teachers' workrooms a teachers' conference room and sometimes more than one conference room of varying sizes are being provided. As new technological progress encourages the teacher to greater individual efforts, so too must additional space be given for conferences of the teachers with other teachers and with an added number of supervisors.

New building plans show an ever expanding interest in the provision of conference rooms both for school staff personnel and group activities. Small conference rooms for student groups are often found adjacent to the schoool library. The conference rooms for students and for teacher and students may be found near especially designed areas that facilitate the team teaching approach. One plan even establishes a conference unit as a part of the corridor.

Some of the new technological approaches to individual and group learning increase the need for small and large group activities if each individual is to realize his greatest educational potential. Thus conference rooms which might even be of the flexible type by the use of movable partitions will increase the square footage of a school building. Such areas with their essential storage and their special furnishings will be expensive to construct.

Conference rooms and office spaces will increase the cost of buildings, but this additional expense will be compensated for by the increase in teaching efficienty.

SECTION V

PUBLIC RELATIONS

COMMITTEE MEMBERS

Bill McKeel, Chairman
Loretta Van Sickle, Recorder
John Bohan
Eula Houlton
Louise Reeves
Harold Fairly

PUBLIC RELATIONS

Introduction to Section

The public schools are owned and financed by the people of a democracy and are operated by them through their representatives. The welfare and progress is determined largely by the people's attitude toward them. School officials and employees are obligated to perform a public relations function, because what the public knows about schools determines how they will regard them. The feeling which the general public has toward the schools makes possible greater opportunities for schools, because there will be a sincere planning and cooperative program of education between themselves and the public. It is this program of planning and cooperation that our community should attempt to achieve.

We all have a different connotation of what public relations should achieve; consequently, an accepted definition would be hard to find. In connection with all public schools in general, there are certain basic ideas on which most authorities agree. There is the accepted belief that it is a broad concept, a body of relationships upon which impressions are possible, rather than a narrow set of rules. Two implications of public relations are the flow of ideas between school and community. The simple fact that public relations give information concerning the schools is sometimes the essence of some authorities' definition. Public relations studies are practiced which from any standpoint other than keeping the public informed for the improvement of a school or schools, has nc merit.

This definition takes into consideration the points mentioned previously:

> Public relations is genuine cooperation in planning and working for a good school, with the public giving as well as receiving ideas. It becomes a two-way process, a two-way flow of ideas between school and community which provides the basis for mutual understanding and effective teamwork.[1]

Board of Education

The board of education is legally responsible for the conduct of the public schools in accordance with state constitutional enactments. The board of education is legally responsible for establishing policy; staff members employed by the board are responsible for carrying out these policies. The board's obvious responsibilities are first to the children, and then to the professional and nonprofessional staffs, the parents, the taxpayers, the community as a whole, and the state.

The board should seek as its sole accomplishment the goal of a better school system. It should seek the aid of capable members of the community through whose efforts the system can be improved. Such an improvement is the best proof that the responsibility has been placed where it belongs.

A board is responsible for policies which provide a high-quality school, and public respect can be maintained only for an educational program which is worthy of support. Good schools reflect credit upon a board; poor ones generate public dissatisfaction. Constant effort to provide adequate facilities and high-quality instruction, accompanied by repeated declaration of intention to do so, is the basis

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[1]American Association of School Administrators, Public Relations for American Schools, Twenty-eighth Yearbook. (Washington: The Association, 1950).

of public support for board action.

A school board which does its job well is constantly aware that its function is legislative--related to general policy--and not executive. It recognizes that mixing legislative and executive affairs makes it more difficult to achieve high quality in a school. Thus, it respects the central role of the Superintendent as the chief executive officer of the school system.

The board and administration seek and welcome individual and group opinions, suggestions, and questions regarding school affairs. Suggestions or complaints presented to individual board members should be referred to the superintendent, who will take appropriate action or refer them to the entire board for action in official board meetings.

Everything a board does and everything members say influences public understanding and support. So does that which is not done or said. Policies which result in good schools help build confidence; those resulting in poor schools destroy it. Board statements providing accurate information about educational needs make it possible to support schools intelligently. Silence or inaccurate statement deprive prople of valuable guidance and result in educational neglect or confusion.

Of course, any member is entitled to express his personal opinions and at times may feel impelled to do so. However, experience shows that restraint and respect for the judgment of fellow board members usually contributes most to public understanding and to the board's capacity to mobilize public support for an adequate school program.

The concept that school board members are trustees of the nation's stake in education is basic, and constant awareness of it induces board

members to act responsibly. After participating in a discussion of trusteeship at a state convention, one board member said:

> That discussion was good for my ego. We seem to be trustees of the foundation of almost everything. We're responsible for providing adequate training for every kid in our district. Each kid's chance to earn a living and make a decent home depends on how well we do the job. As some of the fellows pointed out, schooling affects economic progress, community organization, and the efficiency of government. On top of that we're trustees of all the people's educational desires. We are supposed to combine all viewpoints into policies that are good for all kids and meet general public approval. There is no point in getting sanctimonious, but what a job![2]

Staff

One of the main sources of a good public relations program is a well-informed, positive-thinking, enthusiastic staff. The role of the classroom teacher is surely the most fundamental link in the entire program. We must create within them a sense of responsibility, so they will be willing to carry their part of the load in new areas. A bit of misinformation given carelessly by a teacher may create a very negative impression in the mind of a parent or of a child. The nature and extent of the public relations activities carried out by the classroom teacher will depend to a very great extent upon their concept of just what the purposes of the program are.

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[2]Gordon McCloskey, Education and Public Understanding. (New York: Harper & Brothers, 1959), pp. 342-343.

Some of the questions which the teacher will ask herself are:

1. How will the new teaching technology affect my teaching?
2. Where can I learn about the new methods?
3. Will this technology give me more time to teach?
4. What will be my reaction boward the teacher chosen to perform the new technology?
5. Will my position be imperiled by the adoption of technology?

The first person to inform the staff will be the administrator. He must thoroughly understand the new technology and be prepared to answer many questions. Caution should be exercised in the presentation, and he should avoid the danger of overselling the new method. The staff meetings should consist of a demonstration of the new technique; a discussion of the plan used to develop the program; and the choice of students to be taught by the new method must be presented with reasons for the choice made clear.

After the orientation of the staff has begun, other plans may be executed by the administration. Assuming that he is aware of the many facets involved, a committee of "live-wire" teachers should be appointed to make a further study of the technology. They should be allowed to visit schools or attend conventions where the new technology is demonstrated. Perhaps one of this committee might take part in an actual teaching situation. Meanwhile, the other members of the staff could continue their study of the technology. A bulletin board for clippings of book reviews and articles should be placed in the teachers' lounge and the administrator should see that it is kept attractively. Notes of publications that are available should be in a bulletin to teachers.

Upon the return of the committee, meetings with small groups of teachers should be arranged. These meetings may be informal and brief. Each committee member could talk individually with staff members concerning the technology and offer further explanations. Planning the program should develop with the erthusiasm of these committee members.

After this thorough study has been made and given to the staff members, the questions posed by the teacher will be satisfactorily answered and a deeper understanding of the technology will be gained. Staff members should not consider this technology as a fad, but as an excellent means of improving teaching.

These methods may seem very detailed and slow, but I believe if the program is to be beneficial, we should MOVE AHEAD CAUTIOUSLY !

External Public Relations

Public relations is more than mere publicity; it involves the human element of interactions between and among people and organizations. When concerned with its external function, public relations becomes a system of communication with the various publics which characterize a specific community or situation. To be most effective a definite public relations process can facilitate the efforts of interpreting the school to the "publics." This process encompasses the primary functions of any good administrative procedure. It involves the elements of (1) fact finding, (2) planning, (3) communicating, and (4) evaluating.

> Each one of these steps is an important as the others. Each one is vital to an effective program. Too often there is too little research, too little planning, and too much

> publicity. Emphasis on fact-finding and planning largely distinguishes public relations from publicity.[3]

Taking a closer look into each phase of the process will show a continuum of overlapping among the various phases which results in a cycle of progress.

Fact finding. The extent to which you are able to "feel the pulse" of the persons and organizations to be affected by a new proposal will largely determine the success of it. It is not a matter giving them the facts, rather it involves finding out from the publics what they want to know and tap the many resources available. This phase can be identified as a matter of research-listening. Simply stated, it becomes a question of what is our problem?

Planning. This term becomes fairly self-evident in any organizational process. The following quote provides for a step by step approach to planning within the framework of the definition itself.

> Planning requires a searching look backward, a deep look inside, a wide look around, and a long, long look ahead.[4]

Supplementary to the preceding quote a brief description of each step is more inclusive of what planning requires.

1. A searching look backward - to determine all the factors which led to the situation under study.
2. A deep look inside - in which the assembled facts and opinions are considered in light of the institutions objectives and weighed as to their validity.
3. A wide look around - in which there is a study of like situations in like organizations.

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[3] M. C. Cutlip and Allen H. Center, Effective Public Relations, (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1958), p. 91.

[4] Ibid, p.109.

4. A long, long look ahead - in which goals for the organization and for implementation are set.[5]

Communicating. "It was declared that the primary emphasis of school public relations in the next decade should be helping the public to understand and appreciate the underlying purposes of education in America."[6] The degree to which the above statement by McCloskey is realized will depend to a great extent upon the ability of the administrator to communicate with the public in terms that it understands based on a common ground of experience. Simply the public relations function will be to explain and dramatize the chosen course of action to those who may be affected and whose support is essential.

Evaluating. The final step in any procedure is evaluation. It is from this phase that one may return systematically to the first step, which completes the cycle. Evaluation becomes the checks and balances division of the process. It will tell us how well we did or where we failed. To evaluate is to appraise the whole process in terms of effectiveness. On a face to face concept, "evaluation is the commonsense of profiting from experience."[7]

Financial Aspect

The problem of finance is a continuing element in the question

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[5] Ibid, p.109.

[6] Gordon McCloskey, Education and Public Understanding, (New York, Harper & Brothers, 1959), p. IX.

[7] Cutlip, op. cit., p. 143.

of proper public relations as is pointed out in the Rockefeller report:

> All of the problems of the schools lead us back sooner or later to one basic problem--financing. Education has always been essential to the achievement of our political and moral objectives. It has now emerged as a necessary ingredient in our technological advancement. Good education is needed immediately, and that it is expensive is a fact the American people have never been quite prepared to face. At stake is nothing less than our national greatness and our aspirations for the dignity of the individual. We must build for the future in education as daringly and aggressively as we have built other aspects of national expenditures to the Gross National Product has remained relatively constant at about 3.5% in contrast with the current level--from today's $14 billion to (more than) $30 billion.[8]

Summary

One of our greatest needs is to call the public's attention to the changing aspects of our expanding educational goals as is indicated by Gardner:

> The need has been emphasized repeatedly for reappraisal of existing practices and for innovation, but new problems and new solutions are not the rub of our difficulty. The problem is to get action. American education can be as good as the American people want it to be, and no better.[9]

If we are to teach higher goals, stronger morals, etc., we must ourselves be salesmen for excellence in all personal respects, breading the prison shackles of self-desire and shouldering the yoke of continuous example for all who observe our efforts in this life.

Changing schools is slow, hard work, since change that makes a real difference must occur in people. Daily reports that tell of

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[8]The Rockefeller Report on Education, The Pursuit of Excellence (Garden City, New York: Doubleday & Company, Inc.), pp. 33-34.

[9]J. W. Gardner, Goals for Americans (Englewood Cliffs, N. J.: Prentice-Hall, 1960).

increased student performance, more serious purpose in learning, and better high school preparation indicate that both students and teachers are responding to the demands of the times.

It is obvious that there has been continuous progress in the development of our school systems, but one of the constant problems is to spur continuous progress.

> Although evidence appears on every side of a great tide of change that can carry the schools to a new standard of excellence, there is no assurance that the movement will succeed. Students, parents, teachers, administrators, school boards, and taxpayers will have to make millions of right decisions on the road to excellence, which is always uphill. Community leaders throughout the United States have no greater responsibility, and no more inspirational opportunity than to lend a hand in the remaking of American Education.[10]

We have to fuse the basic premises of education together with the problems of our times. We should use all possible past and future means to enhance the goal of helping everyone to become useful productive citizens. We must stop worrying about the effect of change on each of us in our own little world as long as the long range goal of continued improvement for all is approached by any available beneficial means.

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[10]Charles E. Silberman, "The Remaking of American Education," Fortune, (April, 1960).

SECTION VI

PARTICIPANTS IN THE WORK CONFERENCE

July 3-21, 1961

PARTICIPANTS IN THE WORK CONFERENCE

July 3-21, 1961

Mary Kay Acker
Elementary Principal
Alcott School
Wichita, Kansas

Pauline Andrews
Elementary Supervisor
Cherry Creek Schools
Englewood, Colorado

William J. Baldwin
Administrative Assistant
Douglas School System
Ellsworth Air Force Base, South Dakota

Esther A. Ball
Elementary School Principal
Wichita, Kansas

Marian Barefoot
Director of Special Education
Albuquerque Public Schools
Albuquerque, New Mexico

John P. Bohan
Speech Therapist
Bakersfield, California

W. A. Canode
Superintendent of Schools
Durango, Colorado

Grady M. Chance
Denver Public Schools
Denver, Colorado

Ruth Crossfield
Elementary Principal
Woodland School
Wichita, Kansas

Howard R. Dunning
Superintendent of Schools
Air Force Academy School District
Air Force Academy, Colorado

Harold P. Fairly
University of California
Dept. of Health, Rec. and P. E.
Santa Barbara, California

George Fiedorowicz
Graduate Assistant
University of Denver
Denver, Colorado

Dennis Frydendall
Elementary Principal
District No. 6
Greeley, Colorado

Louis Edwin Gittner
Supervisor of Fine Arts
Cartwright Schools
Phoenix, Arizona

Robert D. Gray
Elementary Coordinator
Denver Public Schools
Denver, Colorado

Eula Houlton
Elementary Principal
McLean School
Wichita, Kansas

Mrs. Julia C. Hynes
Elementary Principal
Central Lakewood Elementary School
Jefferson County Public Schools
Lakewood, Colorado

Alta N. Immell
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Schweiter School
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Ike Jutting
School Superintendent
Zearing, Iowa

Carl P. Kusick
High School Principal
Sheridan Union High School
Englewood, Colorado

Mrs. Vivian Lanser
Sinclair Junior High School
Englewood Public Schools
Englewood, Colorado

Anne LaTronica
Principal, Cherry Hills School
Cherry Creek District #5
Littleton, Colorado

Michael A. Levine
Curriculum Assistant
Dade County
Miami, Florida

Edgar E. Louttit
Asst. Supt. of Instruction
School District #1, Adams County
Denver, Colorado

Stanley L. Malcolm
Graduate Assistant
University of Denver
Denver, Colorado

Samuel J. Mathieson
Denver Public Schools
Denver, Colorado

W. N. McKeel, Jr.
Guidance Director
Sherwood Union High School
Sherwood, Oregon

Marie H. Metz
Denver Public Schools
Denver, Colorado

Donald F. Mueller
School Center Principal
Douglas School System
Ellsworth Air Force Base, South Dakota

Tom Pickens
Deputy Superintendent
School District #28J
Aurora, Colorado

Buford Plemmons
Superintendent of Schools
Haxtun, Colorado

Seth E. Poet
Supt., School District #16
Arapahoe County
Colorado

Roxa Mary Porter
Elementary School Principal
Wichita, Kansas

Milbert Rau
Director of Elementary Education
Rapid City Public Schools
Rapid City, South Dakota

Louise M. Reeves
V-Principal
South Junior High School
Aurora, Colorado

Alex Reuter
Ass't. Supt. in Charge of Elem. Ed.
District #12
Thornton, Colorado

Harold M. Stauffer
Principal Senior High School
School District #6
Cody, Wyoming

Wilma Stoddart
Sheridan Union High School Teacher
District #2
Englewood, Colorado

Edward H. Stone
Coordinator of Instruction
Smiley Junior High School
Denver, Colorado

Donald R. Taylor
Teacher, South High School
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Lillian B. Thada
Elementary Supervisor
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Fairfield, Iowa

Leland A. Thomson
Elementary Principal
Montezuma Community Schools
Montezuma, Iowa

Arthur L. Traylor
High School Principal
Liberty Training School
Liberty, Texas

Paul A. Truitt
Coordinator Audio-Visual Program
Englewood Public Schools
Englewood, Colorado

Robert W. Turner
High School Principal
Greeley High School
Greeley, Colorado

Loretta H. Van Sickle
Elementary Principal
Walt Whitman Elementary School
District #6
Littleton, Colorado

Scott Ward
Superintendent
Elementary School District #23
Englewood, Colorado